

# DCP Midstream, Environmental Events



Demanding Environmental Oil & Gas Compliancy for State Regulations

Lead UX Designer in EnergyLab

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Presentation

2018-2020

# What are Environmental Events in Oil and Gas

## **Environmental events are:**

- Gas leaks to the atmosphere
- Spills to soil
- Spills to water

## **Every state has specific regulations and workflows:**

- Some are rigorous
- Some are relaxed

**OPSTools by DCP had a bad rap and low adoption**

# Learn - Problem

We don't want to be a headline.

U.S. NEWS

## Leak in Keystone pipeline spills 9,000 barrels of oil in North Dakota

It's the second significant spill on the Keystone system since 2017, when around 4,700 barrels spilled in South Dakota.

380,000 Gallons

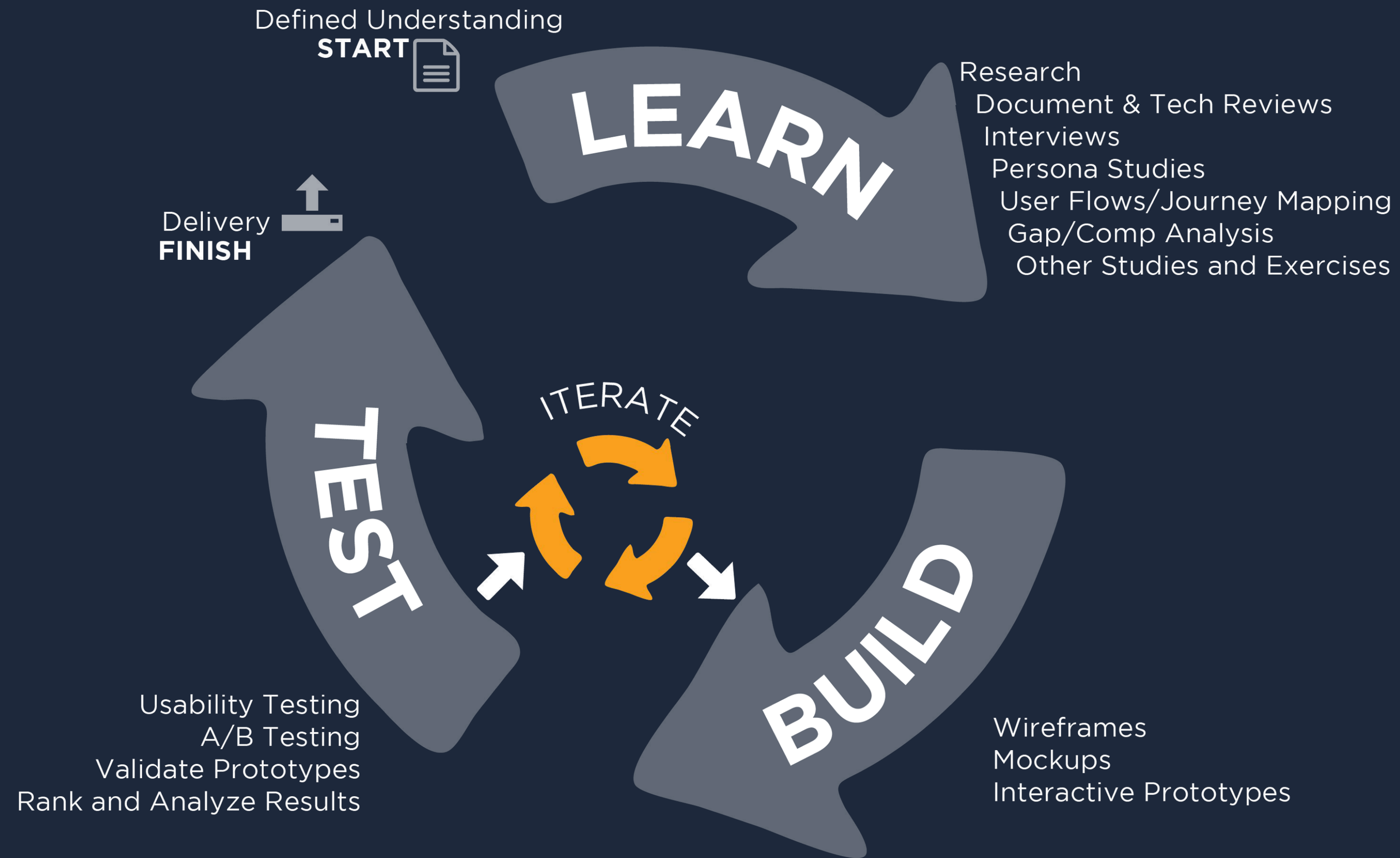
October 29, 2019



UA Pipefitters work on construction of the Keystone XL Pipeline, AP

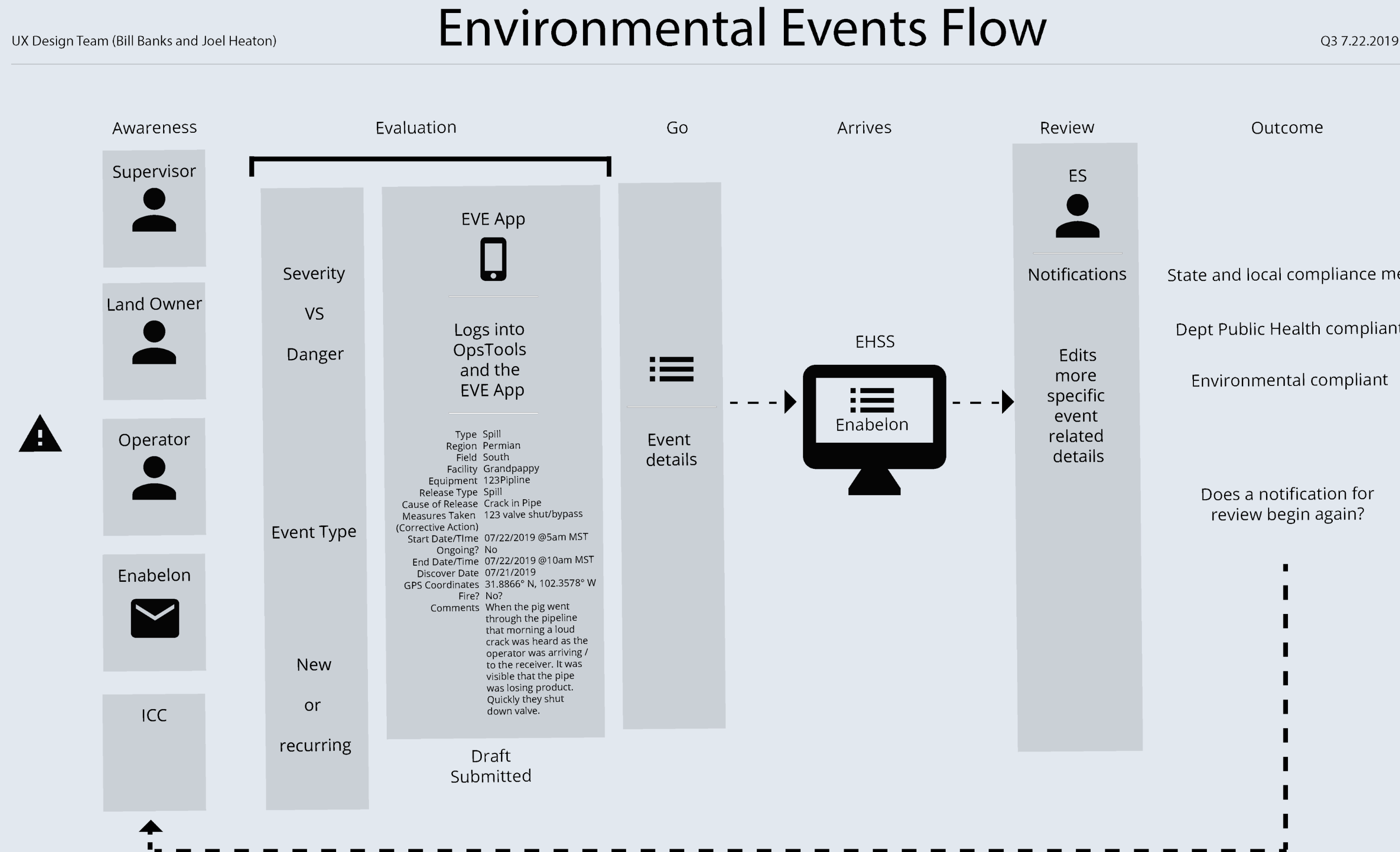
- The second of two oil spills in two years along the Keystone pipeline resulted in half an Olympic-sized swimming pool's worth of crude oil **spilling onto** a North Dakota wetlands area.
- **The Associated Press reports** that the leak was discovered Tuesday night and that crews shut down the pipeline, which extends through 7 US states and into Canada.
- TC Energy, the company that owns the pipeline, estimates about 383,000 gallons – or more than 9,000 barrels of oil – were spilled, though North Dakota **regulators say** drinking water sources were not affected.
- Activists opposing the proposed Keystone XL pipeline extension were outraged by the spill, especially because **TransCanada claims** safety is a "top priority" and says spills are "unlikely."

# Methodology



# Define Goal

1. Capture events in a timely manner
2. Pass event information to EHSS/Enablon to calculate
  - Air emmisions
  - Spills to ground and water
3. Simple, intuitive



Met with ES, Managers, Operators and stakeholders for walk throughs to challenge the hypothesis.

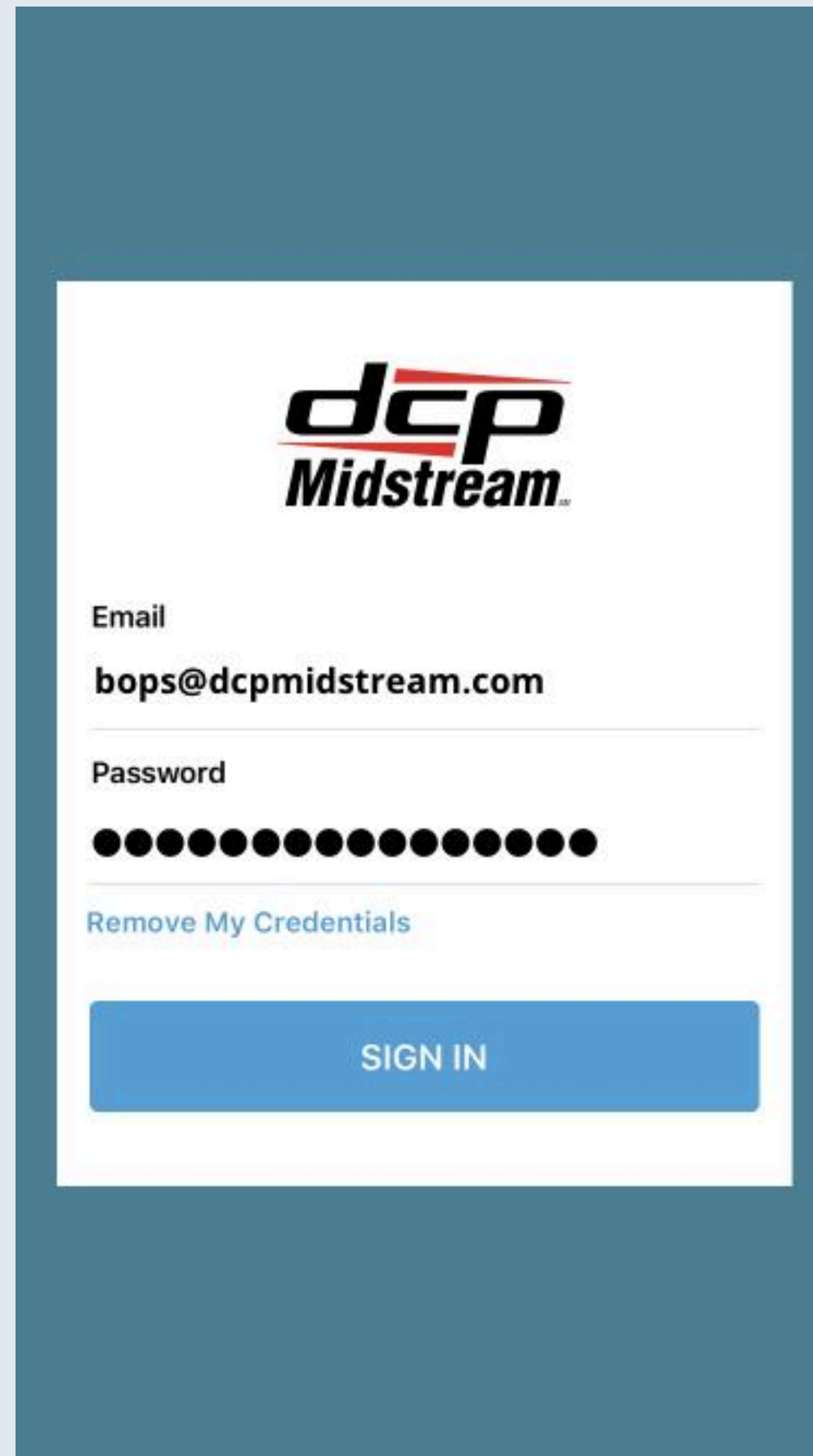
## **The Sequence**

- Location
- Impact
- Details
- Review (possible safety module)

## Recording from legacy

- Air
- Soil
- Water
- or a combination of

# Build - V1



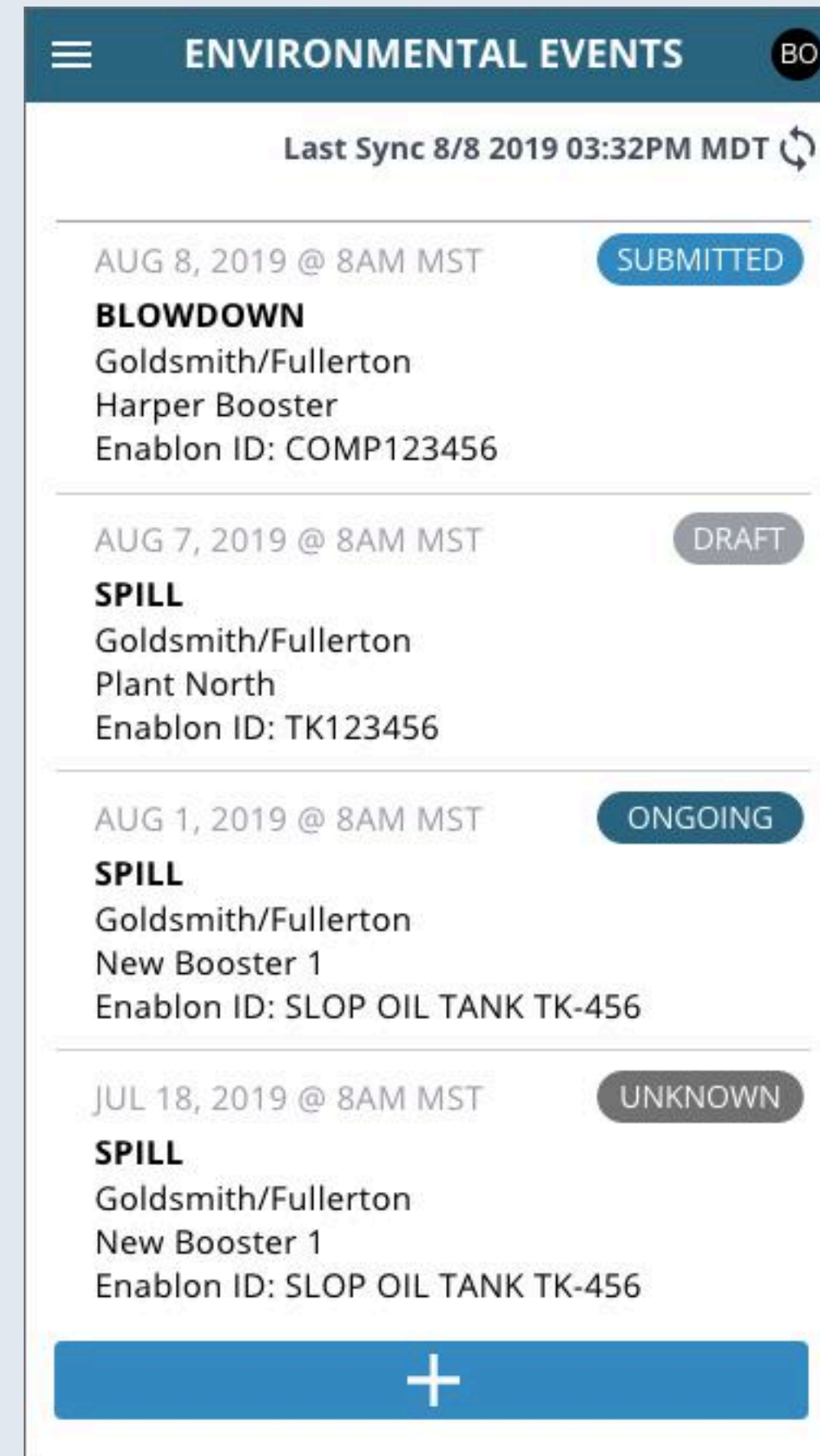
DCP Midstream logo

Email  
**bops@dcpmidstream.com**

Password  
●●●●●●●●●●●●●●●●

[Remove My Credentials](#)

**SIGN IN**

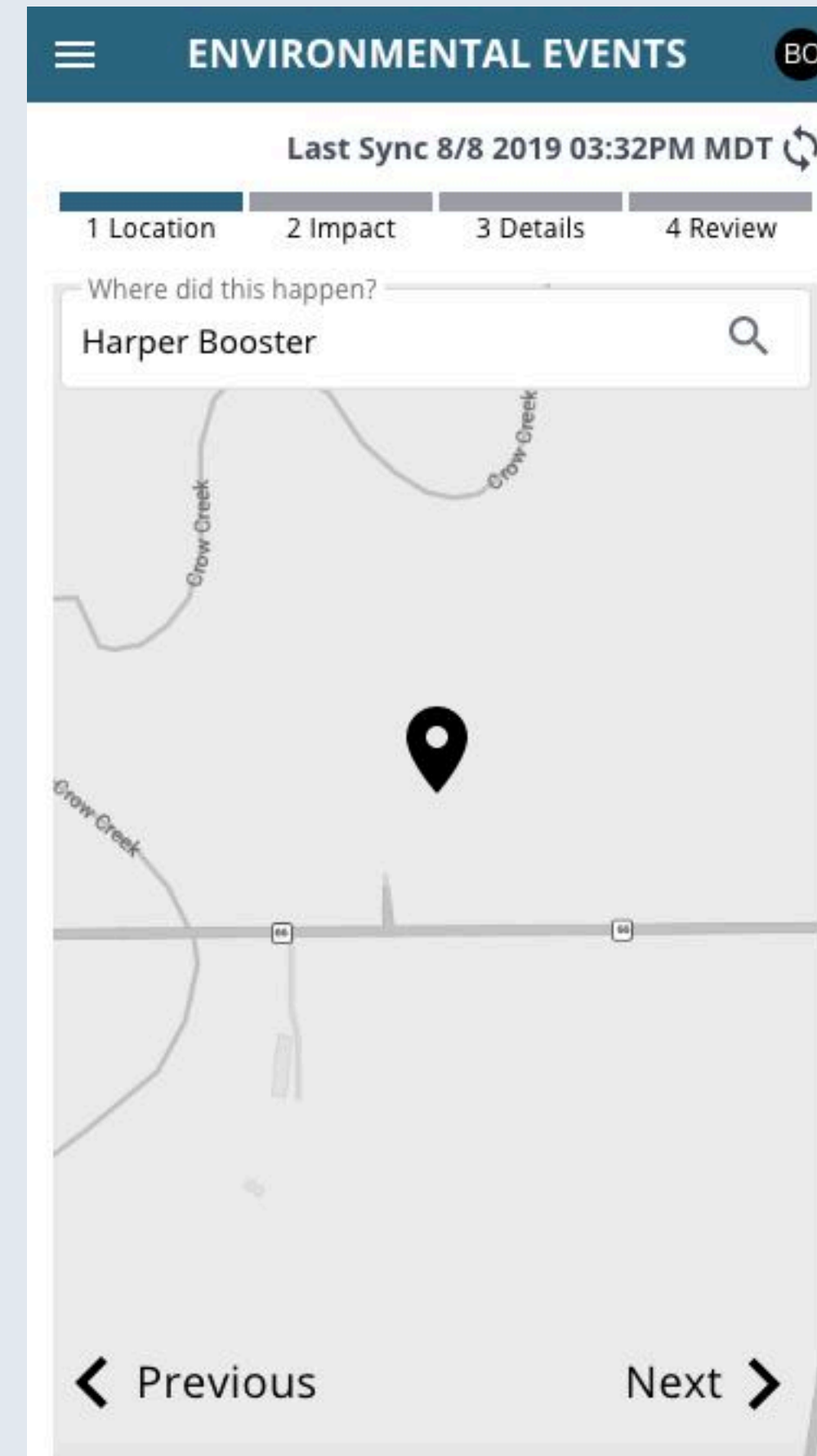


ENVIRONMENTAL EVENTS BO

Last Sync 8/8 2019 03:32PM MDT ↻

- AUG 8, 2019 @ 8AM MST **SUBMITTED**  
**BLOWDOWN**  
Goldsmith/Fullerton  
Harper Booster  
Enablon ID: COMP123456
- AUG 7, 2019 @ 8AM MST **DRAFT**  
**SPILL**  
Goldsmith/Fullerton  
Plant North  
Enablon ID: TK123456
- AUG 1, 2019 @ 8AM MST **ONGOING**  
**SPILL**  
Goldsmith/Fullerton  
New Booster 1  
Enablon ID: SLOP OIL TANK TK-456
- JUL 18, 2019 @ 8AM MST **UNKNOWN**  
**SPILL**  
Goldsmith/Fullerton  
New Booster 1  
Enablon ID: SLOP OIL TANK TK-456

**+**

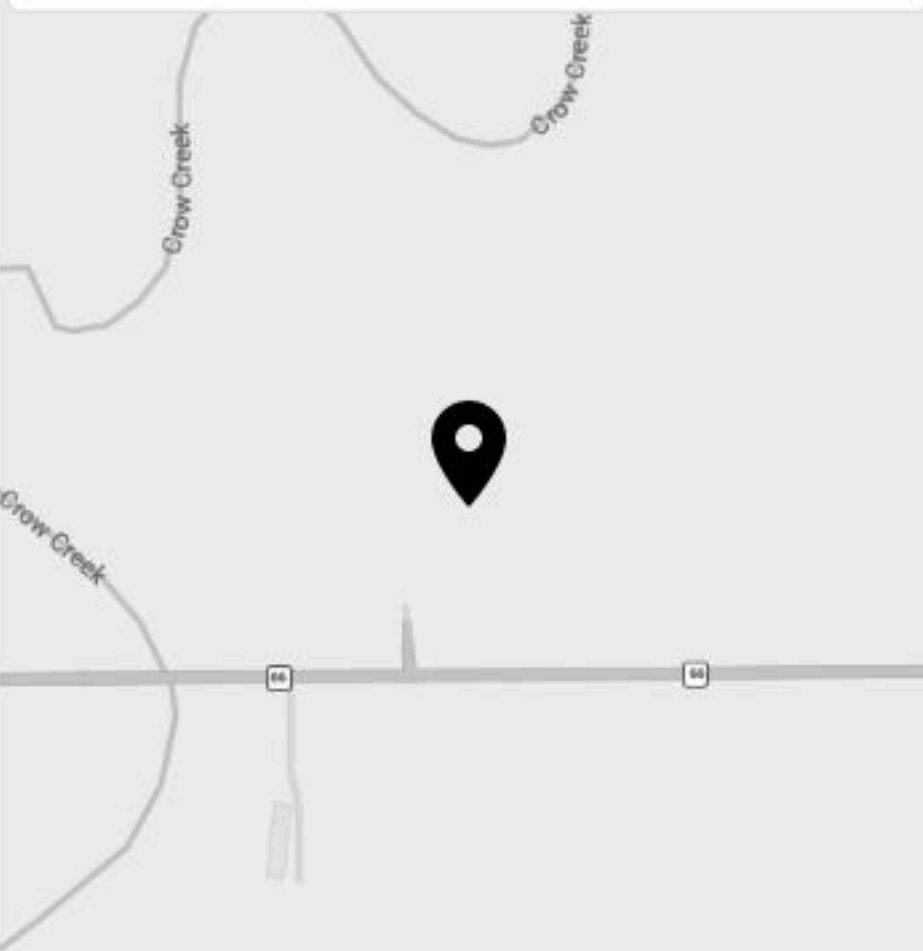


ENVIRONMENTAL EVENTS BO

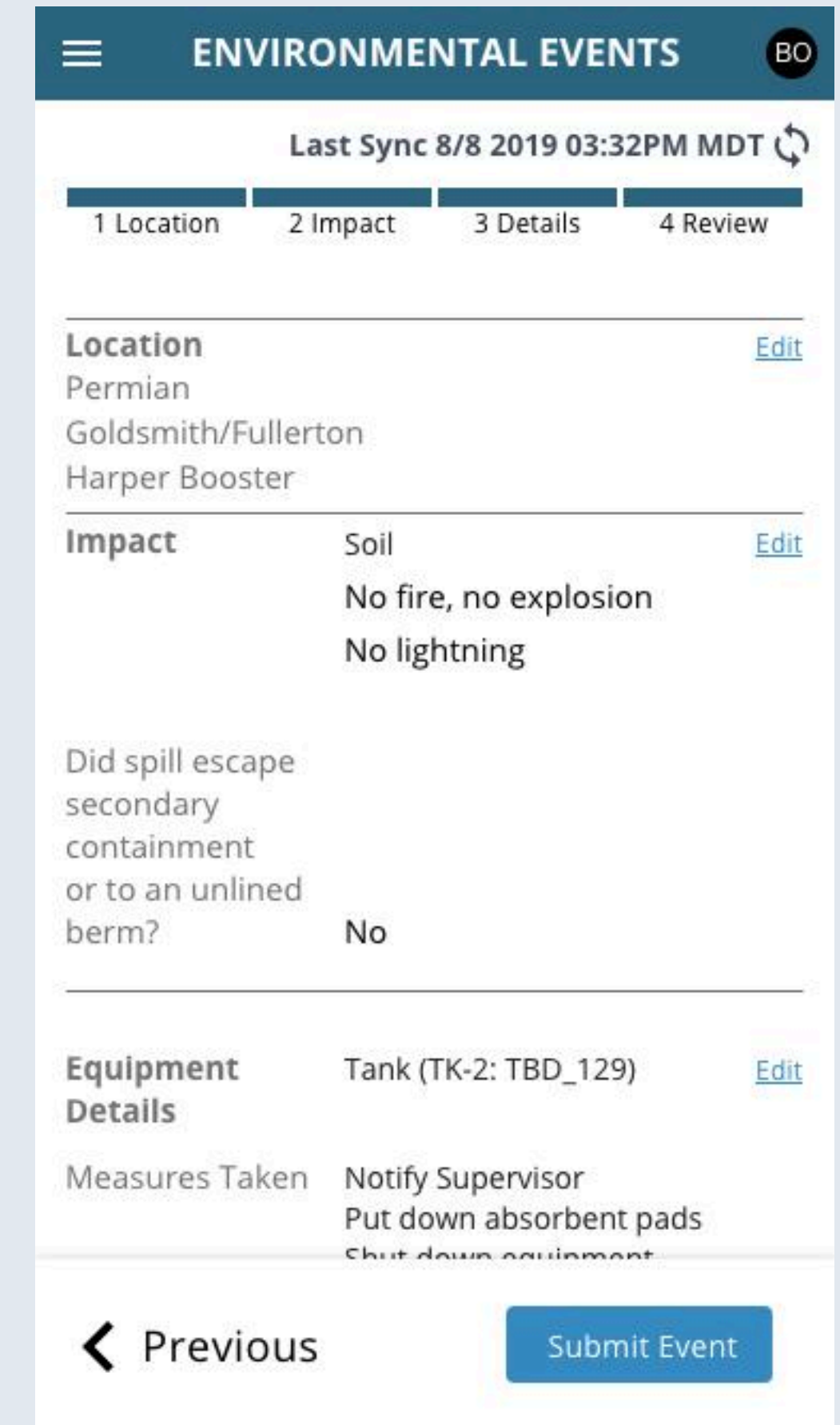
Last Sync 8/8 2019 03:32PM MDT ↻

1 Location 2 Impact 3 Details 4 Review

Where did this happen?  
Harper Booster



← Previous      Next →



ENVIRONMENTAL EVENTS BO

Last Sync 8/8 2019 03:32PM MDT ↻

1 Location 2 Impact 3 Details 4 Review

**Location** [Edit](#)  
Permian  
Goldsmith/Fullerton  
Harper Booster

**Impact** [Edit](#)  
Soil  
No fire, no explosion  
No lightning

Did spill escape secondary containment or to an unlined berm? No

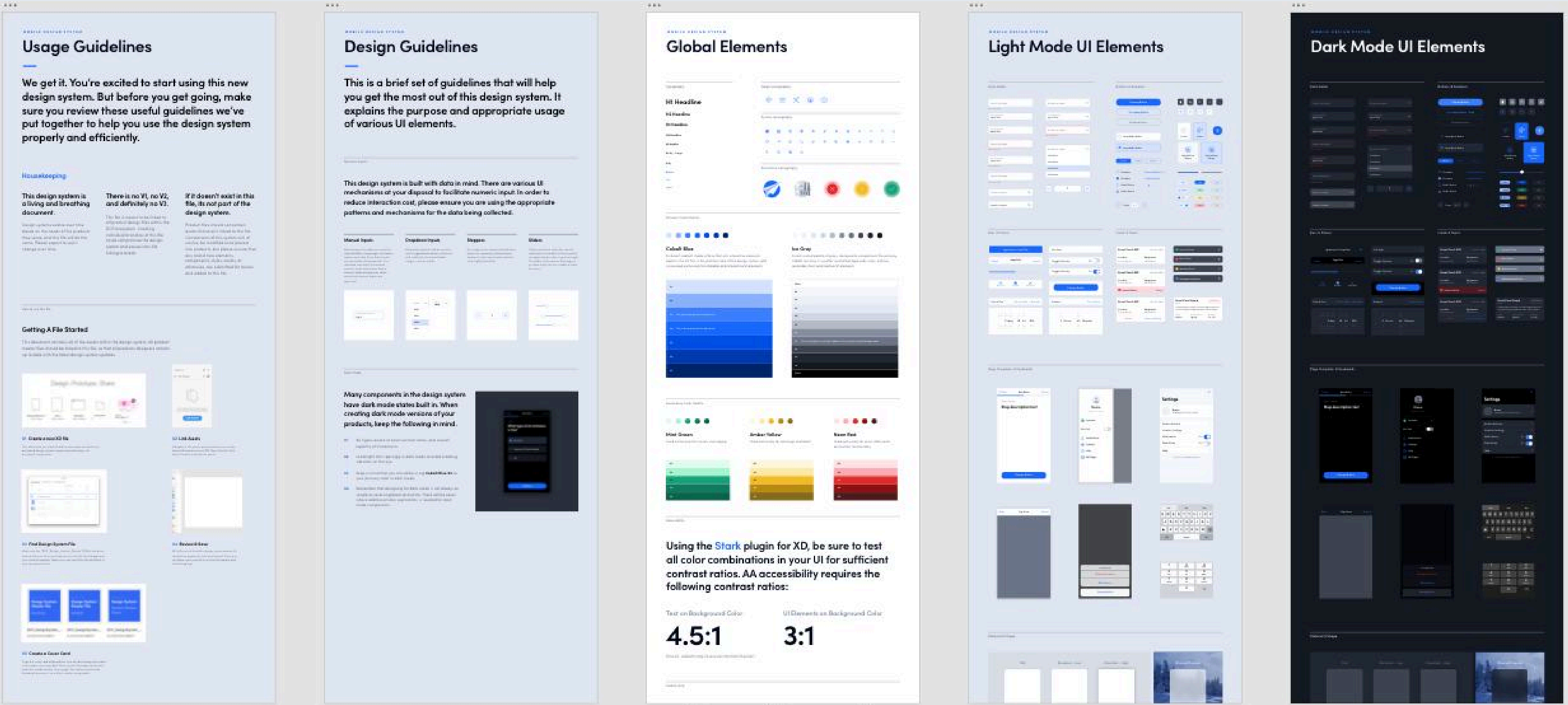
**Equipment Details** [Edit](#)  
Tank (TK-2: TBD\_129)

Measures Taken  
Notify Supervisor  
Put down absorbent pads  
Shut down equipment

← Previous      **Submit Event**

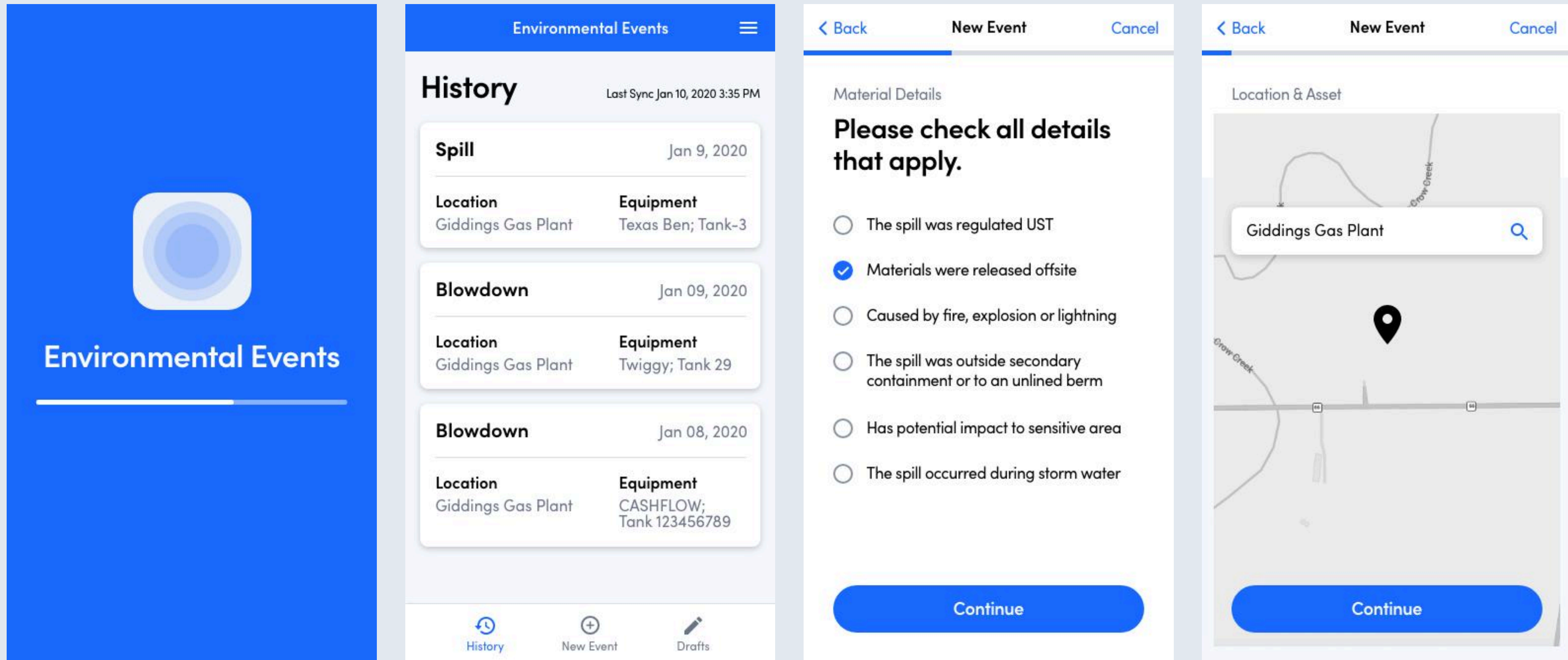
Enhanced OPSTools with Enablon fields for all state workflows.  
Virtual UT all regions.

# Build - Angular Material



# New Material Angular Design Library

# Build - V2



Iterated a V2 prototype with new design system, UT findings. Ionic Mobile Material. On site UT all regions.

# Test – Usability Testing

- 8+** Operators (Field & Plant)
- 8+** Environmental Specialists (Field & Plant Managers)
- 4+** Others (Technologists)

Permian • Midcon • Panhandle • Northern Colorado

UT on location in 4 oil and gas fields regions.  
Captured with Validately.

# Test – Context



## **Billy Ops**

Field Operator

Permian, TX

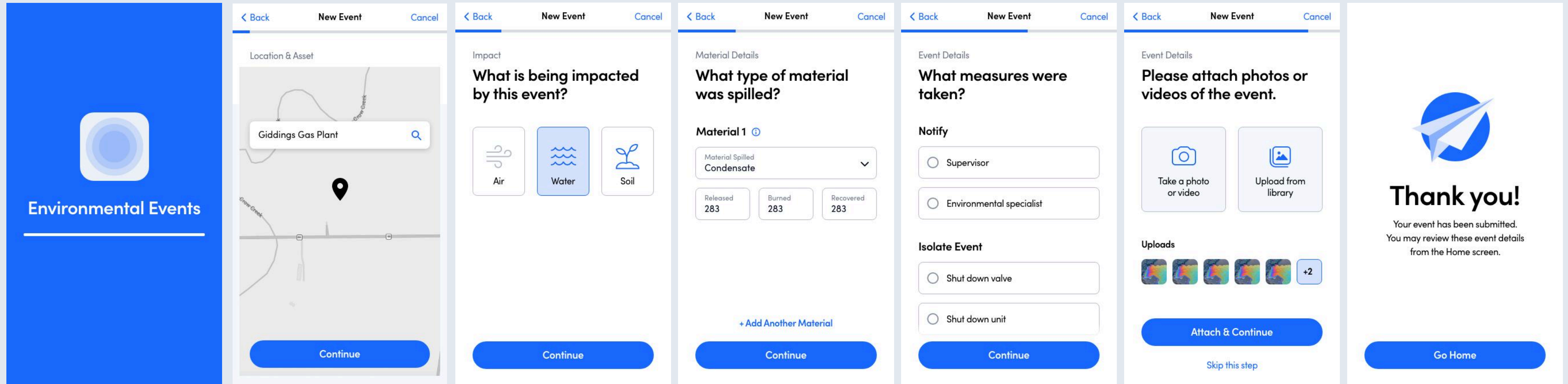
## **EVENT 1**

Spill to Soil & Water

As a field operator Billy Ops you are on location at the Giddings Gas Plant to report a spill to water and soil. You arrive at the Giddings Gas Plant and see condensate flowing out of Tank 3A or what you guys call Bobby's Bayou. It has breached the secondary containment and it is flowing into a pond. You notify your supervisor and turn off the pump and you make note of this in the app. You take a photo make some notes and review the event before you submit it to Enablon through the app.

Real life context, real life feedback.

# Test – Prototype Flow



Progression of the experience.

# Test – Usability Testing Synthesis

## 4 of 8 Users

4 out of 8 understood when the spill was discovered.

Event Details

When was the spill discovered?

Fri, Nov 22	7	31
Sat, Nov 23	8	32
Sun, Nov 24	9	33
Today	10	34 AM
	11	35 PM
	12	36
	1	37

Continue

\* 50% Validated Needs rework.

## 4 of 8 Users

Varied responses to equipment details.

Material Details

Please provide the following details.

**Review**

- Cleanup cannot be completed within 24 hours
- The spill occurred on federal (ie. BLM) or indian oil & gas lease
- Third party damage occurred

~~Event-Area of Spill (optional) 50 sq. ft~~

Name of Land Owner  
Bill Banks

Continue

\* 50% Validated Needs rework.

## 6 of 8 Users

75% understood sequence.

Review

Please review your information.

You will not be able to edit this information once the event is submitted.

**Facility & Asset** Edit

Permian  
Goldsmith/Fullerton  
Harper Booster

**Impact** Edit

Environment Air  
Emission Type Equipment & Pipeline Release  
Release Type Blowdown

Submit Event

\* 75% Validated

## 8 of 8 Users

(8 out of 8 understood) the library and its value

Environmental Events

History Last Sync Nov 24, 2019 3:32 PM

**Blowdown** Nov 25, 2019

Location Equipment  
Lorem Ipsum 987654321

**Submit Failed.** Retry?

**Leak** Nov 25, 2019

Location Equipment  
Lorem Ipsum 987654321

**Spill** Nov 25, 2019

Location Equipment  
Lorem Ipsum 987654321

History New Event Drafts

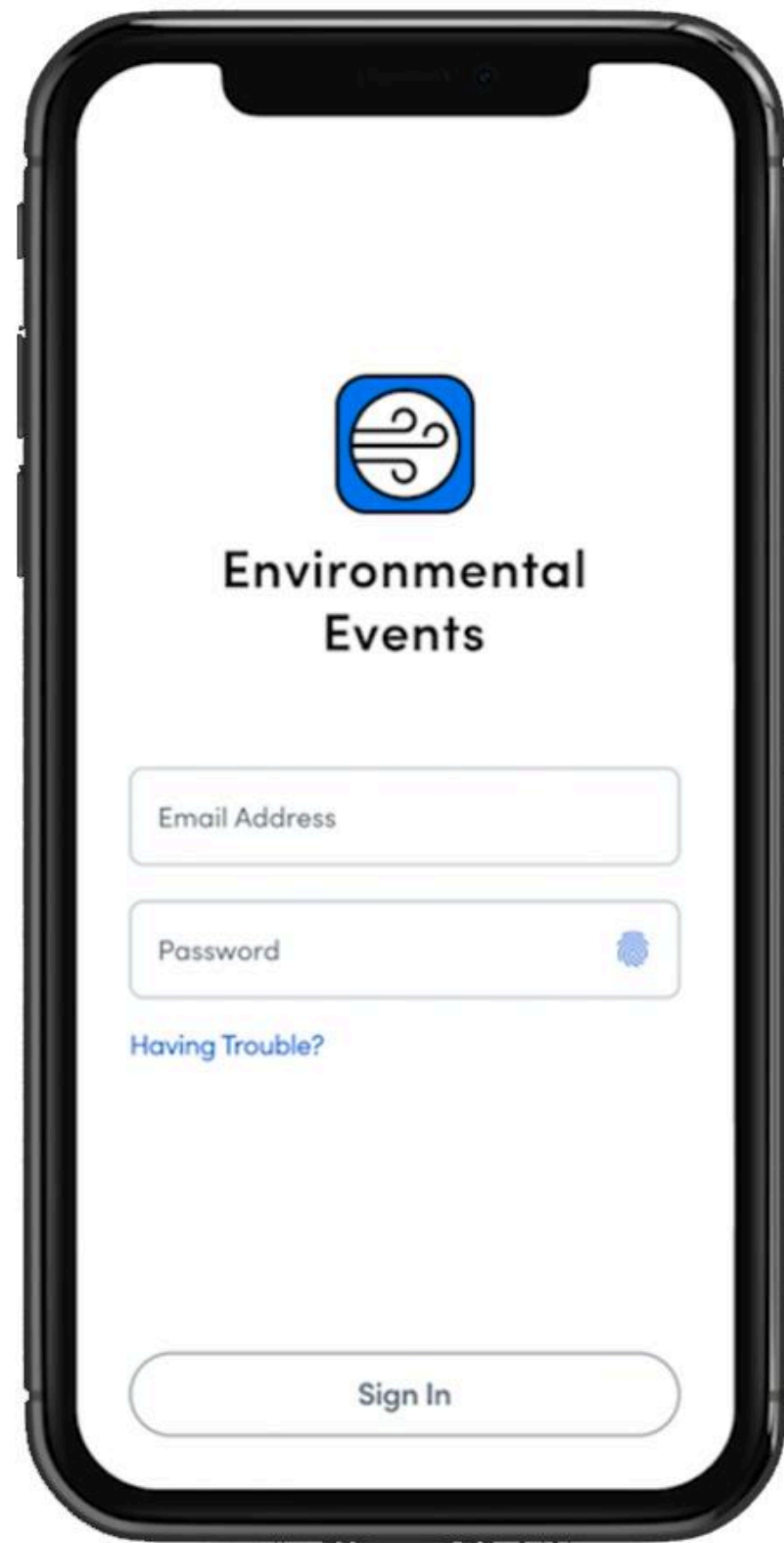
\* 100% Validated

# Delivery – Completed

- Reworked UI
- 2 rounds of usability testing
- Rebuilt App framework
- Revised MVP
- Consolidated all state workflows
- Pilot launch
- Launch
- Training
- Marketing

Final demo and review. Completed roadmap. Go-no-go.  
Development approval to build and launch.

# Conclusion - Launch and release



- 100%** Increase in efficiency
- 1** Standard workflow for digital reporting
- 2500** Users connected and using in field
- 6** States meeting environmental compliance
- 3** Offering for SAAS (Shell, Exxon & Phillips 66)
- 3** Legacy products sunsetted

Success